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CONTEMPORARY AEOLIAN PROCESSES AND LANDFORMS ON THE BAIKAL LAKE SHORE. GENERAL REMARKS

Szczypek T., Snytko W. A., Wika S., Bażenowa O. I**. Współczesne procesy i formy eoliczne na wybrzeżu Bajkału. Uwagi ogólne.** Współczesne procesy i formy eoliczne są nad Bajkałem zjawiskiem relatywnie powszechnym: ich rozwojowi sprzyja odpowiednia budowa geologiczna, systemy silnych wiatrów, zwłaszcza znad tafli jeziornej (czyli wiejących z północo-zachodu i południo-zachodu), a także zintensyfikowana abrazja brzegów oraz różne inne przejawy antropopresji. Wspomniane formy i procesy są rozwinięte głównie w środkowej części wschodniego wybrzeża Bajkału, a także na łagodnym północno-zachodnim wybrzeżu wyspy Olchon, przy czym występują w postaci kilkunastu wyraźnych, relatywnie dużych i odosobnionych stanowisk, graniczących z kompleksami leśnymi lub powierzchniami stepowymi. Stara akumulacyjna rzeźba eoliczna (różnorodne wydmy, zachowane w niektórych miejscach pod pokrywą tajgi) jest współcześnie rozwiewana: dominuje tu zatem deflacyjny typ rzeźby, współczesna eoliczna rzeźba akumulacyjna ma natomiast znaczenie drugorzędne. Obszary rozwoju współczesnej rzeźby eolicznej są na omawianym obszarze istotne pod względem rekreacyjnym, powodują większe zróżnicowanie rzeźby, wzrost bioróżnorodności, a działalność rekreacyjna na tych obszarach może prowadzić do degradacji ich potencjału.

Щипек Т., Снытко В. А., Вика С., Баженова О. И. **Современные эоловые процессы и формы рельефа на побережье Байкала. Общие замечания**. На побережье Байкала достаточно широко распространены эоловые явления. Их развитию способствует геологическое строение, системы сильных ветров, особенно с озерной глади (т. е. дующих с северо-запада и юго-запада), а также усиленная абразия берегов и разные проявления антропогенного прессинга. Эоловые процессы и формы развиты преимущественно в средней части восточного побережья Байкала, а также на пологом северо-западном побережье о. Ольхон. В последнем случае насчитывается полтора десятка ярко выраженных, относительно больших по площади и разобщенных (изолированных) участков, примыкающих к лесным массивам или степным ареалам. Исторически сложившийся аккумулятивный эоловый рельеф (дюны, сохранившиеся в некоторых местах под покровом тайги) в настоящее время развевается: так, здесь преобладает дефляционный тип рельефа, тогда как современный эоловый аккумулятивный рельеф имеет второстепенное значение. Ареалы развития современного эолового рельефа на анализируемой территории имеют несомненное рекреационное значение. Рекреационная деятельность способствует дифференциации рельефа, росту биоразнообразия, а также может привести к деградации потенциала территории.

Key words: lake Baikal, Olkhon, shore zone, aeolian processes and landforms
Słowa kluczowe: Bajkał, Olchon, strefa brzegowa, procesy i formy eoliczne
Ключевые слова: оз. Байкал, о. Ольхон, береговая зона, эоловые процессы и формы рельефа

Abstract

Present-day aeolian processes and landforms on the Baikal shore are relatively common phenomenon: their development is favoured by suitable geological structure, systems of strong winds, particularly from the lake surface (i.e. blowing from the north-west and south-west), the intensified abrasion of shores and various other signs of human pressure as well. These forms and processes are developed mainly in the central part of the eastern coast of Lake Baikal, as well as on the gentle north-west coast of the island of Olkhon, and they occur in the form of several distinct, relatively large and isolated sites, bordering on the forest complexes or steppe areas. Old aeolian accumulation relief (various dunes preserved in some places under the cover of the taiga) at present is blown

out: therefore deflation type of relief predominates here, while the contemporary aeolian accumulation relief is of secondary importance. Areas of development of contemporary aeolian relief are of recreational importance for the study area, they cause a larger variety of relief, the increase in biodiversity and they also contribute to some economic losses.

INTRODUCTION

The modern shoreline of Lake Baikal formed over a long time. Its morphology as well as dynamics of the processes shaping it are closely linked with the history of the Baikal rift in the Quaternary. The development of processes in the lakeshore zone is affected by, among others, hydrodynamic, geological-geomorphological, climatic and seismic conditions. A significant role with regard to the intensity and scale of the abrasion-accumulation processes is played by the lake water regime (PINIEGIN et al., 1976).

Raising water level in Lake Baikal by 1.2 m, evoked by the construction of the Irkutsk HPS in the 1950s and 1960s, favoured changing the natural development of exogenous processes (TRZCINSKIJ, 2007; TRZCINSKIJ, KOZYRIEWA, SZCZYPEK, 2009; TRZCINSKIJ et al., 2009; TRZHTSINSKIY, KOZYREVA, SZCZYPEK, 2010). Lakeshore abrasion intensified, causing the activation of the old and the emergence of new processes. Many accumulation forms, which had been developing at the natural water level for years, started washing away. In many places the increased amount of washed material favoured the development of a creek flowing along the lakeshore; as it was rich in sediments, the reconstruction of the once destroyed accumulation forms started.

Besides abrasion, other processes shaping contemporary morphology and dynamics of the lakeshores activated. The considerable length of the Lake Baikal coastline (over 2 000 km) means there is a unique variety of the lakeshore types and forms. Abrasive shores predominate (about 80% of the length), while the rest are accumulation shores (ROGOZIN, 1993).

As a result of the 40-year observations and measurements, it was found that in many places abrasion caused recession of the Baikal lakeshores by several to tens of meters (e.g. Maximikha – 10–120 m, Katkova – 12.5 m, Byezymyanka – 24 m, Enkheluk – 14–18.5 m, Gryemyakhinsk – 25–40 m, Sukhaya – 53 m, Posolskoye – 39.7–53 m, Povorot – 60–80 m, Nizhneangarsk – 15–22 m (IMETKHENOV, 1994, 2003; OVCHINNIKOV et al., 2004). This process contributed to the activation of a variety of landslides, as well as aeolian phenomena. The latter are of great importance for the development of certain parts of the Baikal lakeshore.

The aim of this paper is to review contemporary aeolian processes and forms on the Baikal lakeshores, based on years of field research, the results of which have already been published.

DISTRIBUTION AND MAIN FEATURES OF CONTEMPORARY AEOLIAN FORMS ON THE BAIKAL LAKESHORE

As already mentioned, the emergence of contemporary aeolian forms in the Baikal lakeshore zone is primarily the result of anthropogenic raise of the water level in the lake. No less important role is played by other anthropogenic factors, such as intensive use of aggregates from certain parts of the shore, excessive felling of the taiga, and cattle and sheep grazing on the sandy steppes – the processes that lead to exposing loose substrate – as well as uncontrolled development of tourism with similar consequences. Aeolian processes and forms refer here, as indeed everywhere, to the proper structure of the ground: the occurrence of old Baikal sand and gravel deposits, old (Pleistocene) dunes deposits, layers of waste-mantle material, modern river sediments and desiccated beach material. This material is blown and transported by strong winds, mainly north-west and south-west (from above the vast lake surface as part of a specific system of winds generated in the Baikal valley in conjunction with the adjacent mountain ranges). A smaller role is played by the winds from other directions, including from the mainland (KHAK, SZCZYPEK S., SZCZYPEK T., 2006; SNYTKO, SZCZYPEK, 2006; SZCZYPEK et al., 2012). Distribution of contemporary aeolian processes and forms on the Baikal lakeshores are presented in fig. 1. The west coast of the lake is almost completely devoid of these phenomena due to the presence of solid rock, mainly granitoid, which – creating typically steep mountain slopes (Coastal Mts *Primorskyi khrebyet* and Baikal Mts *Baikalskyi khrebyet*) – descend directly to the lake water. The only exception is the Sandy Bay (*Peschanaya*), one of the most beautiful places, extremely popular with tourists. In popular terms, these should be dunes, but in fact no such forms exist. This is just blown sandy beach (now completely transformed as a result of intensive use for tourism and recreation). The effects of aeolian activity are visible several-tens of meters above the water, though, where the wind blows – generally fine- to medium-grained – granitoid waste-mantle of varying thickness. Typical deflation areas are visible here, as well as a blown aeolian cover. The roots of single specimens of larch *Larix sibirica* growing there are exposed to a depth of 2.5–3 m (walking trees – *khodulnye derevya*); this indicates the size of deflation (now intensified by tourists) (photo 1).

Blown deposits at this site show an extremely low Krygowski's quartz grain abrasion coefficient Wo = 136–203, and there is complete absence of γ and matt grains (waste-mantle sand: Wo = 124) (WIKA et al., 1999; AGAFONOV, 2007). It should be stressed, that such misshaped trees occure also in the east and north-east coast of Baikal, especially in the Olkhon island (WIKA et al., 2002; KASYANOVA, 2016 and others).

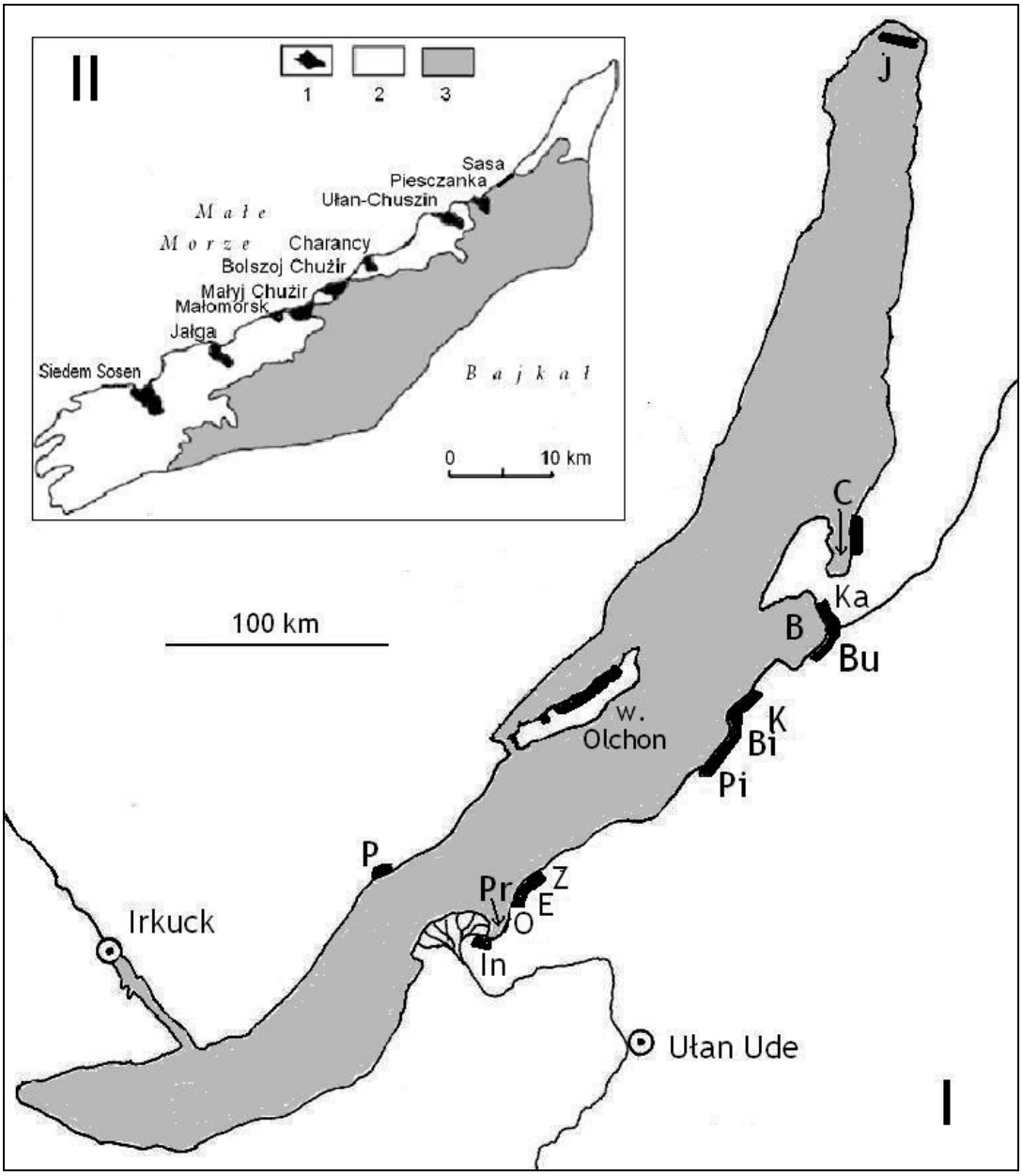

Fig. 1. The location of the main fields of blown-out sands on the coast of Lake Baikal (I) and a gentle shore of Olkhon (II): I: B – Barguzin Bay, C – Chivyrkuy Bay, P – Sandy (Peschanaya) Bay, Pr – Proval Bay, J – Yarki island; dune sites: Bi – Bezymyannaya, Bu – Bugry, E – Enkheluk, In – Inkino, K – Katkova, Ka – Karga, O – Oblom, P – Peschanoye, Z – Zagza; II: sites of contemporary aeolian sands, 2 – steppe areas, 3 – taiga areas

Rys. 1. Lokalizacja głównych pól piasków przewiewanych na wybrzeżu Bajkału (I) oraz na łagodnym brzegu Olchonu (II): I: B – Zatoka Barguzińska, C – Zatoka Cziwyrkujska, P – Zatoka Piesczanaja, Pr – Zatoka Prował, J – w. Jarki; stanowiska wydmowe: Bi – Biezymiannaja, Bu – Bugry, E – Enchełuk, In – Inkino, K – Katkowa, Ka – Karga, O – Obłom, Pi – Piesczanoje, Z – Zagza; II: 1 – stanowiska współczesnych piasków eolicznych, 2 – obszary stepowe, 3 – obszary tajgowe

Рис. 1. Местоположение основных полей перевеваемых песков на побережье Байкала (I) и на пологом берегу о. Ольхон (II):

I: B – Баргузинский залив, C – Чивыркуйский залив, P – бухта Песчаная, Pr – залив Провал, J – Ярки; дюнные поля: Bi – Безымянная, Bu – Бугры, E – Энхэлук, In – Инкино, K – Каткова, Ka – Карга, O – Облом, Pi – Песчаное, Z – Загза; II: 1 – поля современных эоловых песков, 2 – степные территории, 3 – таежные территории

Photo 1. Walking trees (*khodulnye derevya*) in the Sandy (Peschanaya) Bay, 2008 (phot. by T. Szczypek)
Fot. 1. Drzewa kroczące w Zatoce Piaszczystej, 2008 (fot. T. Szczypek)
Фот. 1. Ходульные деревья – бухта Песчаная, 2008 (фот.: Т. Щипек)

In the northern part of Lake Baikal aeolian sands are found on the Isle of Yarki (see fig. 1-I). In fact, this is a spit built of lacustrine-fluvial deposits at the base, and lacustrine deposits above; in the upper part these deposits have been blown and formed small dunes. Over the last 60 years, the water of Lake Baikal has been intensively destroying both these aeolian forms as well as the base of the spit, now threatened with complete disappearance. What also contributes to the degradation of the island is recently increased tourism. Aeolian relief shows now a typical dynamic deflationary and abrasive character, and at the same time is an extremely important ecological element as – together with the spit – it protects a unique ecosystem of the Angara Bay (Angarskyi Sor) (lagoon in the northernmost part of Lake Baikal and a bird sanctuary) from degradation and total transformation (AFANASYEV, 1975; ROGOZIN, 1993; ROGOZIN, TRZCINSKIJ, 1993; TRZHTSINSKY, RZENTALA, 2004; WIKA et al., 2006b).

Modern aeolian processes and forms are best developed in the central part of the east coast of Lake Baikal: from the Selenga delta to the Chivyrkuy Bay (fig. 1-I) (miniature centres of such processes also occur in two or three places on the north-east coast at the foot of the Barguzin Mts. north of the Chivyrkuy Bay, but because of the size they are not marked on the scheme) (WIKA et al., 2002, 2003, 2006a; NAMZALOV et al., 2008).

Contemporary activation of aeolian processes is also caused by human activity: from cattle grazing and damaging the edge of the Baikal terrace by heavy vehicles, also those with caterpillar tracks, by the Selenga river delta, to the taiga thinning and tourist traffic in other areas.

Morphological picture and the intensity of land transformation by the wind on the east coast vary, which seems to depend on the abundance of the material, both old and supplied contemporarily by lake waves, as well as on the attractiveness for tourism and recreation.

At the Selenga delta (Inkino site) aeolian processes play out against the steppe landscape: the main element of morphology is a contemporary small scarp dune encroaching the steppe (photo 2). In addition, there are a number of specific deflation forms (concave and convex), because the blown material includes the sediments of a lake terrace, showing a slightly different granulometric composition from the characteristics of deposits in other locations.

Further north, from the Oblom Cape to the Enkheluk site (fig. 1-I), contemporary aeolian relief is developing against the background of the taiga and is not very spectacular: these are thin and almost flat aeolian covers on a growing cape; small inselbergs on blown, previously created thin aeolian covers about 15–20 m inland (Enkheluk site); and monotonous surfaces of blown sands (partially preserved by the forest), coming from the narrow beach and a wider lake rampart (Zagza). This poor development of aeolian relief stems from small degradation of the taiga on one hand, and from the small tourist interest on the other hand.

In the central part of the east coast of Lake Baikal contemporary aeolian relief is also developing surrounded by the taiga, and has been initiated in some places by uncontrolled taiga logging. Tourist pressure also plays a role. This relief is, however, much more varied than the previously mentioned and takes much larger area. This applies to all three delimited

Photo 2. Inkino site: scarp dune against a background of steppe landscape, 2004 (phot. by T. Szczypek)
Fot. 2. Inkino: wydma krawędziowa na tle krajobrazu stepowego, 2004 (fot. T. Szczypek)
Фот. 2. Инкино: Приоткосная дюна на фоне степного ландшафта, 2004 (фот.: Т. Щипек)

sites (Peschanoye, Bezymyannaya and Katkova), but they are not identical (WIKA et al., 2002, 2003). At the Peschanoye and Bezymyannaya sites, old dune forms are undercut by storm waves; this process is more intensive the first site – these are steep shores (sandy cliffs) of up to about 7 m, whereas in the Bezymyannaya site the shores are 3–3.5 m high. The sandy material of these dunes, and from similar forms in Peschanoye east of the coastline, is intensely blown and blown away, resulting in a "spectacular" and complex deflation relief. It is a little less complex in Bezymyannaya. What is observed in the Peschanoye site is constant burying the edge of the taiga by the wandering sand; in Bezymyannaya some dunes encroach on the asphalt road, while the others on the local marshes (photos 3 and 4).

Photo 3. Dunes and the swamp in Bezymyannaya site, 2001 (phot. by V. A. Snytko)
Fot. 3. Wydmy i bagno w stanowisku Biezymiannaja, 2001 (fot. W. A. Snytko)
Фот. 3. Безымянная: дюны и болото, 2001 (фот.: В. А. Снытко)

The morphological situation at the Katkova site is somewhat different: due to a small supply of sand from the lake, the wind blew away virtually all the material. Therefore, there is a wide deflation zone from the Lake Baikal side, and the dunes – pushed away from the lake – are moving eastward. In general, the relief is deflationary, with the presence of inselbergs – remains of the material blown away, while one of the dunes is steadily moving and – similarly to Bezymyannaya, only more intensely – buries the same road (in winter this process significantly increases, because of additional snow transportation).

A little further to the north-east, by the Barguzin Bay on both sides of the mouth of the river Barguzin – there is another belt of contemporary developing aeolian relief. This belt is represented by two distinguished sites: Bugry and Karga (see fig. 1-I). They occur against the background of taiga vegetation, but their physiognomy differs. The Bugry site is generally similar to the Peschanoye site: old dunes are heavily eroded away and they encroach on the forest (activation of sands is related to deforestation and partly to the development of tourism). At the Karga site, however, adjacent to strongly marshy area (and previously

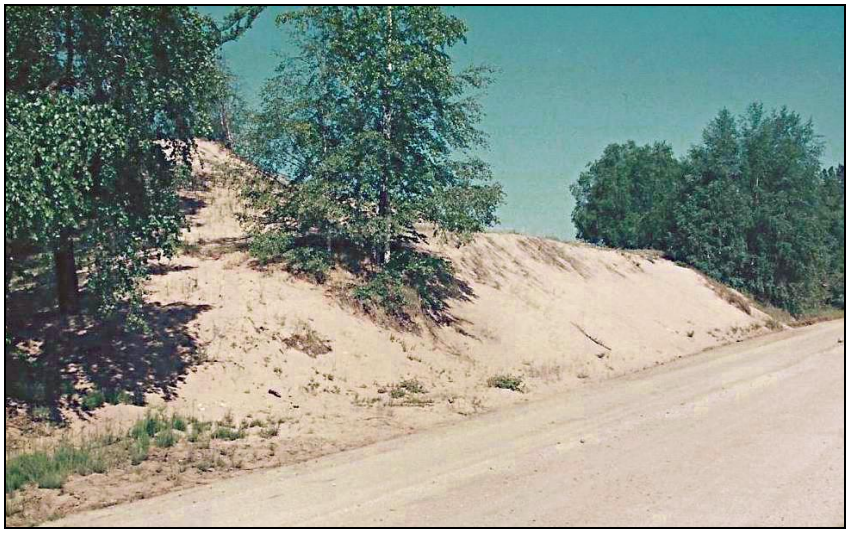

Photo 4. Site Bezymyannaya: dune covering the road, 2002 (phot. by G. I. Ovchinnikov)
Fot. 4. Stanowisko Biezymiannaja: wydma zasypująca drogę, 2002 (fot. G. I. Owczinnikow)
Фот. 4. Безымянная: дюна наступающая на дорогу, 2002 (фот.: Г. И. Овчинников)

forested) by the already mentioned increase in the level of Lake Baikal, blown away dunes are separated by numerous marshy depressions, which makes them less able to move (photo 5). It should be noted that the location of the dunes refers to the presence of a number of fan-arranged sandy lake ramparts at the Barguzin Bay, and contemporary activity of sands results from undercutting the shore by storm waves and the gradual disappearance of taiga growing on them as the effect of too moist substrate (WIKA et al., 2002; TRZCINSKIJ, KOZYRIEWA, SZCZYPEK,. 2009a, 2010).

On the south-east shore of the Chivyrkuy Bay there is another area of blown sand (fig. 1-I). It is small and does not stand out with anything special with respect to its morphological picture

Photo 5. Site Karga: blown-out dunes against a background of boggy areas, 2001 (phot. by T. Szczypek)
Fot. 5. Stanowisko Karga: rozwiewane wydmy na tle obszarów zabagnionych, 2001 (fot. T. Szczypek)
Фот. 5. Карга: развеваемые дюны на фоне заболоченных территорий, 2001 (фот.: Т. Щипек)

A classic example of the development of modern aeolian processes by Lake Baikal is Olkhon – the largest island of the lake (fig. 1). Blown deposits occur here on the gentle north-west shore, while the south-east is completely devoid of them due to unfavourable geological structure and topography (steep granitoid mountain slopes descend directly to the lake surface).

The discussed island contains nine fields of blown, blown away and accumulated aeolian material (fig. 1-II). In fact, there are eight sites, and the Sasa site is a dry beach with vegetation partially similar to psammosteppe (on blown sands), therefore it should be included to the aeolian category. Other sites of contemporary blown sands are highly diverse in terms of their physiognomic features and are developing both on the background of the taiga (3) and steppe (5). The reason for the modern mobility of the aeolian material here is both intensive felling of the taiga, farming and cattle and sheep grazing in the past, and recently – completely uncontrolled tourism, even though the island as a whole is part of the Pribaikalsky National Park, and every visitor is obliged – at least theo-

retically – to report their stay in a special office at the ferry crossing.

The most famous among both tourists and researchers, is the area Peschanoye – the largest on Olkhon Island (approx. 1.2 km^2); at the same time – due to its morphology – it is identified as the most classic and representative area of blown sand by Lake Baikal (WIKA, SNYTKO, SZCZYPEK, 1997; SZCZYPEK et al., 2012; BAZHENOVA et al., 2015). A characteristic feature of this field is the presence of a vast deflation area spreading from the morphological edge at the beach over 300–400 m inland; the area behind it is dominated by the ubiquitous deflation forms, created on the site of older dunes of different shapes and sizes. The field ends with a clear and thick edge of blown-in sand, which gradually covers up the adjacent taiga (photo 6). A similar morphological picture is visible at the sites of the Bolshoi Khuzhir and Malyi Khuzhir, although they have smaller surface area. In the earlier site sand does not extend to the edge of the taiga so spectacularly, but it does encroach on the road. Intensive deflation of sandy material in the vicinity of the coastal zone caused that – as in the case of the Karga site – we also recently observe the interweaving of small marshy areas with sandy deflationary surfaces and small aeolian accumulation forms.

Photo 6. Peschanka site in Olkhon island, general view, 2008 (phot. by T. Szczypek)
Fot. 6. Stanowisko Piesczanka na Olchonie, widok ogólny, 2008 (fot. T. Szczypek)
Фот. 6. Песчанка на о. Ольхон – общий вид, 2008 (фот.: Т. Щипек)

From the morphological point of view, the most interesting among the steppe sites is the field Ulan-Khushin of an area similar to that of the Peschanoye site. In this case, the sand field is surrounded on all sides by the monotonous classical steppe areas, while the sands are partly covered by rarely growing old and often deformed by strong winds specimens of pine *Pinus sylvestris* and Siberian larch *Larix sibirica*. The richness and diversity of deflation and accumulation forms here, however, is significantly lower than in the previous case. Blown away sands gradually enter into the said steppe and create more and more far-reaching thin sandy cover, overgrown with suitable species of psammophilous plants building the so-called psammosteppes.

From the landscape point of view, other sites with aeolian material being blown away are less spectacular. Of these, only Malomorsk starts right behind the Baikal beach; the surface of the blown sandy material there (deflation) is dotted with small accumulation bumps. Besides, some of the material blown away from the beach created on the slopes of distinct adjacent granitoid slopes a thin cover, which is now blown and varied with small deflationary basins.

Slightly different is the site of Yalga. Here, too, a distinct aeolian cover developed on gentle slopes, covered with steppe vegetation. Today however, as a result of intensive grazing, this vegetation is partially physically degraded, which allowed for the initiation of aeolian processes and development of distinct deflation basins with accompanying small accumulation covers. The Yalga site is perfectly visible from the surface of Lake Baikal (photo 7).

The last of the contemporary aeolian sites on Olkhon Island – Sem Sosen (Seven Pines) – consists of two parts: 1) one located closer to the shoreline, and 2) one located far above, on the distinctly inclined granitoid slopes. Both are fragments of the ancient extensive aeolian cover of sands blown away from the coastal zone of Lake Baikal, quickly stabilised by the steppe vegetation. Activation of aeolian processes was caused, as in the case of the Yalga site, by intensive grazing. Currently, the lower part of the Sem Sosen site is morphologically similar to the Yalga, while in

the upper part strong *sarma* winds have almost completely blown away the thin cover, the presence of which is indicated by the poorly marked small but numerous deflation basins with accompanying miniature accumulation covers composed of coarse and very coarse material.

Photo 7. Site Yalga: the view from the deck of boat, 2008 (phot. by T. Szczypek)
Fot. 7. Stanowisko Jałga: widok z pokładu kutra, 2008 (fot. T. Szczypek)
Фот. 7. Ялга: общий вид из палубы катера, 2008 (фот.: Т. Щипек)

DYNAMICS OF AEOLIAN SANDS BY LAKE BAIKAL

The data on the dynamics of aeolian sands in the area is limited, as this issue for various reasons has not received much attention. The information available to the authors was obtained some time ago on the basis of both direct field measurements, and the analysis of aerial photographs from various times. As far as the authors know, these data refer only to certain objects on Olkhon Island, as well as to the central part of the east coast of Lake Baikal and the Peschanaya Bay on the west coast (AGAFONOV, 1975, 1990; AGAFONOV et al., 2001, 2002; AGAFONOV, 2007; WIKA et al., 2003; OVCHINNIKOV et al., 2006).

As a result of deflation, followed by transportation and accumulation, sand encroaches on the taiga, steppes, marshy areas as well as roads and buildings (e.g. the main village on Olkhon – Khuzhir).

The results of meagre field studies conducted on Olkhon Island indicate that in one place the deflation rate is 2.4–34.1 mm/yr, and in the second – the rate of the sand movement reaches 2–98 cm/yr, while the rate of the deep deflation the Peschanaya Bay was determined at 27.1 mm/yr.

On the other hand, in the central part of the east coast of Lake Baikal, on the basis of the analysis of aerial photographs, it was found out that the rate of migration of various types of sand dunes in different sections is not the same. For instance, in the wilderness Katkova it amounts to an average of 0.17–2.93 m/yr, usually in the range of 0.9–1.4 m/yr; covering the edge of the forest with sand, on the other hand, is at the rate of 1.7–2.1 m/yr. In the wilderness Bezymyannaya the rate of the movement of some dunes reaches 1.5–2.5 m/yr, and in the wilderness Peschanoye – 0.3–0.7 m/yr.

FINAL REMARKS

Contemporary aeolian forms and processes on Lake Baikal are relatively common: their development is contributed by favourable geological structure, systems of strong winds, particularly from above the lake surface, as well as intensified abrasion and various manifestations of human impact. Old accumulation aeolian relief (various dunes preserved in some places under the taiga) is today blown away (in terms of, e.g. WOJTANOWICZ, 2010); what prevails here, therefore, is the deflationary type of relief, while modern aeolian accumulation relief is of secondary importance. Both of them help to increase morphological diversity, although the intensity of these processes in recent years has been significantly decreasing (SZCZYPEK et al., 2012), and numerous microforms get blurred. Areas of active blown sands are tourist and recreation attractions; at the same time they contribute to the degradation of the adjacent taiga and steppe areas. On the other hand, they increase biodiversity in terms of both botanical and zoological aspects. In some cases, however, they contribute to economic difficulties. Anyway, contemporary aeolian processes and relief on Lake Baikal are currently more common and the intensity of their development increased since the artificial raising of the lake level.

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